which after all is the redeeming and consistent feature of any new symptom-group in psychiatry. This, together with involution melancholia and dementia præcox in its narrower sense, that is, not as a common dumping ground for all atypical clinical forms of adolescent insanity, are the three disease of the Kraepelin school, which we can afford to bolt whole. They have already undergone mental digestion by our German confréres. Under sensory insanity he includes amentia, acute dementia, dementia præcox, katatonia, stupor and mental confusion. He looks upon them as mere syndromes, as only a part of the morbid picture, claiming that their onset is always with sensory disturbances, hallucinations, or delirium. He does not believe in elevating this syndrome to a clinical dignity. It may be pertinently asked — why? If an onset with sensory disturbances is to be the determining factor of his "sensory insanity," why does he not include under the group the various febrile and toxic psychoses, or even the paranoic states, for these likewise frequently start with isolated hallucinations or illusions? If, as he claims in a previous portion of the book, he has adopted a classification based upon the greatest number of fundamental criteria, nosological, etiological and anatomo-pathological, why does he postulate a group merely upon the content of sensory disturbances in the onset? The contradiction is very manifest. The entire concept of sensory insanity appears to us to be strained and artificial, and totally contradicted by all clinical study in its broadest sense.

Acute paronia, in its delirious or hallucinatory form, is an acute paranoic state, a paranoic delirium frequently with a mystical content. The late paranoias are really the hypochondriacal paranoic states of involution or senility. In the description of choreic insanity, there is no mention of the grave forms of chorea insaniens occurring during pregnancy. Under the *toxic psychoses* of the second subgroup, he includes the mental disturbances of pellagra, alcohol, morphine, cocaine, chloral, lead and carbon monoxide. Alcoholic insanity is given a rather poor clinical description. No mention is made of the exalted or depressive hallucinoses and only a few lines are given to the polyneuritic mental disturbance (Korssakow's disease). Under Saturnine insanity, nothing is said about the lead deliria, or the acute or chronic lead encephalopathies.

*Group 3*, includes all those diseases which are the expression of known or demonstrable anatomo-pathological alterations of the brain. The descriptions under this group, paralytic dementia, luetic, senile, post-apoplectic, aphasic and traumatic dementia, and the dementia from tumors, scleroses and other organic diseases of the brain, are among the best in the book. The forty-one clinical observations are minute and painstaking, while the illustrations, especially the pathological, leave nothing to be desired.

*Histological Studies on the Localization of Cerebral Function*, by ALFRED W. CAMPBELL. University Press, Cambridge, 1905. pp. 360.

These new histological studies on the localization of cerebral function, are in many respects so revolutionary and illuminating, that a rather detailed summary of the work seems justified. The greater part of the research was communicated to the Royal Society of London in 1903, and a full publication was made possible by a grant from this same society. Histological studies of the nervous system can be pushed in three directions; by the study of the brain during development, in conditions of disease, and in the normal state. In this case, the normal human material consisted of three cerebral hemispheres examined for nerve cells and fibres, three for fibres only and two par-

tially examined for both. The ages of the individuals ranged from 19 to 48 years. The normal comparative material comprised chimpanzee and orang brains. The pathological material included two brains from cases of amyotrophic lateral sclerosis, seven cases of amputation of extremities, three of tabes, one of an old capsular lesion and two cases of old standing blindness. After some general historical considerations on cortical fibre arrangement and nerve cell lamination, he proceeds to the minute study of the structure and functions of various portions of the cortex. The motor cortex of both man and the anthropoid ape, is limited to the anterior central convolution, the posterior being a "silent" area. This is in harmony with the electrical stimulation experiments of Sherrington and Grunbaum, but in contradistinction to the work of other physiologists. Histologically the area corresponds approximately to the distribution of the giant cells of Betz, cells which alone seem to control volitional muscular movements. In cases of amytrophic lateral sclerosis, a disease limited to the motor neurones, these Betz cells are alone liable to destruction. In cases of amputation also, the changes are limited to the precentral gyrus and the annectant para-central lobule. The post-central gyrus is purely sensory in function, constituting the higher cortical terminus for the conveyance and appreciation of impressions relating to the complex tactile sense. In this area there are no true cells of Betz. It seems to correspond to the Monakow's cortical lemniscus. In a disease primarily of the sensory neurones, namely, tabes dorsalis, the cortical cell changes are absolutely limited to this region, and in those conditions where the common sensations suffer a disturbance (tactile, muscular, stereognostic, pain, temperature), the histological changes found in the brain are also confined to the post-central gyrus. Histologically he distinguishes between the visuo-sensory and visuo-psychic areas, the functions of which are sufficiently indicated by their names. Both are limited to the calcarine region, a conclusion derived from ablational experiments and clinico-pathological material (cortical or subcortical hemianopsia, distribution of macular field, psychic blindness, alexia, color blindness, optic aphasia). The area of the cortex for the reception of auditory stimuli covers the transverse temporal gyri and in the recorded cases of long standing total cortical deafness, this area was included in the destruction, together with neighboring parts like the insula, supramarginal gyrus and the opercular part of the ascending parietal convolution. Its histological structure is homologous with the visual area. In cases of pure word deafness, he was unable to detect any microscopic changes in the left angular gyrus, but in the literature relating to this condition, there was found atrophy of the temporal lobes. The auditory neuronic chain is very complex, comprising the end fibres from the organ of Corti, the cochlear nerve, the ventral and dorsal cochlear nuclei as the first link in the chain; the striae medullares, the corpus trapezoideum and the superior olivary bodies as the second link; the retro-lentiform portion of the internal capsule, the corona radiata and the temporal cortex as the third link. In conditions where the sound-perceiving or the sound-discriminating sense is impaired, any of these links may be disturbed. The physiological centre for the sense of smell is confined to the limbic lobe, the lobus pyriformis and the cornu ammonis. Clinico-pathological data have only partially borne out this evidence, however, but comparative anatomy has shown that the parts detailed are the primary olfactory centres, in spite of the contradictions seen in anosmatic animals. His "parietal" area comprises the precuneus, the superior parietal gyrus and the anterior part of the supra-marginal gyrus. Its function seems to be that of

elaborating the complex impressions of the muscular and the stereognostic senses. The "intermediate pre-central" field is in front of the pre-central area proper and extends downwards to the orbital surface of the hemisphere. It includes the well known area of Broca, the centre for speech. He partially postulates a separate writing area in this field, as he found cell changes in a case of amputation of the right hand, thus agreeing with Bianchi's theory. One of its chief functions seems to be the control of high and low evolutionary movements, this being so well marked that he states the following "Law:" "in the intermediate pre-central cortex there is a sequential deposition of centres for the control of higher evolutionary movements, following the same order from above downwards as that observed in the precentral area proper." The frontal and prefrontal areas are electrically "silent;" they seem to be the seat of the high cerebral functions, making up the "psychical tone" of the individual. Removal or disease seems to disaggregate the personality, peculiar forms of mental disturbance and alterations of character occur, the "Witzelsucht" of the German writers. In cases of dementia, the greatest cerebral wasting occurs in this region, varying directly with the amount of mental defect. In other words, the higher psychic and association functions seem to be localized in this area; witness the atrophy in idiocy, imbecility, general paralysis and in some cases of dementia præcox. The data of comparative anatomy also bears out this hypothesis. The island of Reil is phylogenetically very old, it probably represents the gustatory centre and it has been found altered in cases of aphasia. The addendum comprises the comparative anatomy and physiology of the brains of the cat, dog and pig. The plates are well drawn and graphically represent the views of the writer on all the points discussed. In view of the thorough work, it is to be hoped that the author will apply his methods (complete studies of serial sections over entire areas) to the study of the basal ganglia, the deeper parts of the cortex and various nerve tracts. I. H. CORIAT.

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*The Analysis of Racial Descent in Animals*, by T. H. MONTGOMERY Henry Holt & Co., New York, 1906. pp. 311.

The author discusses environmental modes of existence, hereditary and embryonic differentiation, relations of modes of reproduction and conjugation, life cycles and polymorphism of individuals, variation and mutation, transmutation of species, parellelism of ontogeny and phylogeny, morphological comparisons, relative values of morphological characters and criteria of racial advancement. Each vital phenomena he considers a step in the individual or racial change. If the morphologist regards structure as a visible stage of progress, there can be no conflict between him and the physiologist. If we knew what form meant we should interpret it into function. Interpretations of descent have hitherto been too morphological. They should include chemical and physical constitution and environment, and especially the relative value of characters implied, the criterion of which is the degree of conservatism, should never be lost sight of. We must assume monophyletic origin until the opposite is proven. We must anticipate intermediate connectants between species, must consider modifications due to stimulating changes in the environment, and deem hereditable substance not excluded from external influence. The individual does not recapitulate the development of the race, and no particular ontogenic stages are more ancestrally remnant than others, but all stages of ontogeny are equally cenogenetic and palin-